

CLAIMS:

1. A device for generating an output audio signal (L, R) based on an input audio signal, the input audio signal comprising a plurality of input subband signals (N), the device comprising:
a plurality of delay units (76, 501...504) for delaying at least part of the input
5 subband signals to obtain a plurality of delayed subband signals, wherein at least one input subband signal is delayed more than a further input subband signal of higher frequency, and
a combining unit (77) for deriving the output audio signal from a combination of the input audio signal and the plurality of delayed subband signals.
- 10 2. A device as claimed in claim 1, wherein the output audio signal includes a plurality of output subband signals.
3. A device as claimed in claim 2, the device further comprising a subband filter bank (78, 79) for synthesizing a time domain output audio signal (L,R) from the plurality of
15 output subband signals.
4. A device as claimed in claim 1, wherein the input audio signal is a mono audio signal and the output audio signal is a stereo audio signal.
- 20 5. A device as claimed in claim 1, wherein the number of delay units is smaller than the number of input subband signals, and wherein the input subband signals are subdivided in groups over the plurality of delays units.
6. A device as claimed in claim 5, wherein the plurality of delay units comprises
25 a first delay unit (501) for delaying a group of relatively high frequency subbands with one subband sample, and at least one further delay unit (502...504) for delaying a group of relatively low frequency subbands with at least a further subband sample.

7. A device as claimed in claim 1, wherein the delay units provide delays which are monotonically increasing from high frequency to low frequency.
8. A device as claimed in claim 1, wherein the subband filter bank is a complex
5 subband filter bank.
9. A device as claimed in claim 8, wherein the complex subband filter bank is a complex Quadrature Mirror Filter bank.
- 10 10. A device as claimed in claim 1, the device further comprising:
an input (70) for obtaining a correlation parameter indicative of a desired correlation between a first channel (L) and a second channel (R) of the output audio signal (L,R), and
wherein the combining unit (77) is arranged for obtaining the first channel (L)
15 and the second channel (R) by combining the input audio signal and the plurality of delayed subband signals in dependence on the correlation parameter.
11. A device as claimed in claim 10, wherein the first channel (L) and the second channel (R) each comprise a plurality of output subband signals, and wherein the device
20 further comprises two synthesis subband filter banks (78,79) coupled to an output of the combining unit (77) for generating a first time domain channel (L) and a second time domain channel (R) on the basis of the output subband signals respectively.
12. A device (700) as claimed in claim 1, wherein the device (700) further
25 comprises:
an analysis filter bank (72) of M subbands to generate M filtered subband signals on the basis of a time domain core audio signal,
a high frequency generator (73, 74) for generating a high frequency signal component derived from the M filtered subband signals, the high frequency signal
30 component having N-M subband signals, where $N > M$, the N-M subband signals including subband signals with a higher frequency than any of the subbands in the M subbands, the M filtered subbands and the N-M subbands together forming the plurality of input subband signals (N).

13. A device as claimed in claim 1, wherein the plurality of delay units is arranged for delaying the at least part of the input subband signals with a delay of an integer number of subband samples, wherein at least one input subband signal is delayed more than a further input subband signal of higher frequency, and wherein the device further comprises:
- 5 a fractional delay unit for delaying the at least part of the input subband signals with a delay which is a fraction of a time between two subsequent subband samples and which delay may be constant for all of the at least part of the input subband signals, and
- a switching unit for switching between the plurality of delay units and the fractional delay unit in order to obtain the plurality of delayed subband signals.
- 10 14. A device as claimed in claim 13, wherein the switching unit switches by cross-fading between the output of the plurality of delays and the output of the fractional delay.
15. A device as claimed in claim 13, wherein the device further comprises a
- 15 detection unit for detecting a signal strength of the input audio signal, and wherein the switching means is arranged for switching to the fractional delay in the case that the signal strength is above a predetermined threshold, and for switching to the plurality of delay units in the case the signal strength is below the predetermined threshold.
- 20 16. A device as claimed in claim 13, wherein the input audio signal includes a switching indicator, and wherein the switching unit is arranged for switching in dependence on the switching indicator.
17. A method of providing an output audio signal (L, R) based on an input audio
- 25 signal, the input audio signal comprising a plurality of input subband signals (N), the method comprising:
- delaying (501...504) at least part of the input subband signals to obtain a plurality of delayed subband signals, wherein at least one input subband signal is delayed more than a further input subband signal of higher frequency, and
- 30 deriving the output audio signal from a combination of the input audio signal and the plurality of delayed subband signals.
18. An apparatus (700) for supplying an output audio signal, the apparatus comprising:

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an input unit (70) for obtaining an encoded audio signal,
a decoder (71) for decoding the encoded audio signal to obtain a decoded
signal including a plurality of subband signals,
a device as claimed in claim 1 for obtaining the output audio signal based on
5 the decoded signal, and
an output unit for supplying the output audio signal.